

REMARKS

Claims 1 through 8 and 12 through Claim 17 are pending in the application.

Claims 1 and 13 have been amended emphasize that smoked sausages incorporating the inventive casings are not separately smoked. Support for this amendment can be found in the Application-as-filed, for example on Page 1, line 32 through Page 2, line 1.

Claims 1 and 13 have been amended to reflect advantageous inventive casings in which a liquid smoke application time of at least 5 days is not performed prior to shirring. Support for this amendment can be found in the Application-as-filed, for example on Page 7, lines 19 through 21.

Claims 16 and 17 have been canceled, without prejudice or disclaimer to the filing of continuing applications thereon and solely to advance prosecution of the above-referenced case.

Reexamination and reconsideration of this application, withdrawal of all rejections, and formal notification of the allowability of the pending claims are earnestly solicited in light of the remarks which follow.

Section 112 Rejection

Claim 16 stands rejected over the recitation "liquid smoke has a viscosity ranging from 15 s to 18 s." Without addressing the merits of the rejection, Claim 16 has been canceled, solely to advance to advance prosecute of the above-referenced case. Accordingly, Applicants respectfully request withdrawal of the foregoing rejection.

Claims 1 and 13 stand rejected as indefinite for the recitation “a time of action of the liquid smoke of at least 5 days is not necessary.” Claims 1 and 13 have been amended to reflect that the foregoing soaking time period is not performed prior to shirring. As noted above, support for this amendment can be found in the Application-as-filed. Accordingly, Applicants respectfully request withdrawal of the foregoing rejection.

Claim 17 stands rejected over the recitation “uniform.” Without addressing the merits of the rejection, Claim 17 has been canceled, solely to advance to advance prosecute of the above-referenced case. Accordingly, Applicants respectfully request withdrawal of the foregoing rejection.

*The Claimed Invention is Patentable
in Light of the Art of Record*

Claims 1 through 8 and 12 through 17 stand rejected over United States Patent Application Publication No. 2003/0059502 (“US 502”) to Krallman et al. in light of United States Patent No. 5,399,427 to Stenger et al. (“US 427”); United States Patent No. 6,221,410 to Ramesh et al. (“US 410”) and United States Patent No. 4,897,295 to Erk et al. (“US 295”).

It may be useful to briefly consider the invention before turning to the merits of the rejection.

Applicants respectfully reiterate that food casings imparting a smoke flavor and dark coloration to foodstuffs contained therein are highly advantageous. Unfortunately, it is quite difficult to incorporate a sufficient amount of smoke flavoring into food casings for subsequent transfer into the foodstuff. Heretofore known smoke transport casings must be stored in contact with the smoke coating in a sealed bag or the like for an extremely long period of time, such as the 5 to 10 days noted within US 502, prior to shirring and subsequent stuffing.

Applicants have found that casing layers formed from wettable, at least moderately swellable polymers that are of sufficient thickness can absorb quite elevated amounts of liquid smoke that is used to impart a smoky flavor and dark coloration to foodstuffs, such that the heretofore known extended smoke coating soak times are no longer required.

Applicants have more particularly found that liquid-smoke-impregnated, tubular, single-layer or multilayered food casings comprising a single-layer which is based on polyamide and/or copolyamide alone, or comprising an inner layer based on polyamide and/or copolyamide alone, in which the inside of the casing has a surface energy of greater than 35 dyn/cm that further have a swelling value of at least 10 % may readily be impregnated on the inside with liquid smoke, such that an additional browning agent is not required, as recited in Claim 1. The avoidance of browning agent was quite surprising as browning agents are well known for use in smoke formulations, as clearly evidenced by the primary reference.

In fact, the inventive casings provide such elevated absorption properties that the heretofore known liquid smoke application time of at least 5 days prior to shirring and subsequent stuffing is likewise unnecessary, as reflected in the claims as-amended. Such a result was altogether unexpected by those skilled in the art, particularly in light of the absence of additional browning agent, as evidenced by both the primary reference and the Application-as-filed on Page 7, lines 19 – 22.

In especially advantageous embodiments, the inventive food casings incorporate polyamide and/or copolyamide alone as a sole or inner layer having a surface energy of greater than 35 dyn/cm and either a single-layered thickness of 50 to 130 μm or a polyamide inner layer thickness of 15 to 27 μm in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 wt % and the foregoing properties permit the impregnation of the casing with liquid smoke in the absence of an additional browning agent, as recited in Claim 13.

Applicants respectfully reiterate that the claimed invention is patentable in light of the cited references, considered either alone or in combination.

Applicants particularly respectfully submit that the only cited reference directed to smoke transport casings is US 502. Consequently, Applicants respectfully make of record that the only pertinent teachings as to the attributes and requirements of smoke transport films casings be gleaned from US 502. In sharp contrast the claimed invention, US 502 expressly requires both browning agent and an at least 5 day liquid smoke application time. The secondary references, which teach or suggest absolutely nothing regarding liquid smoke transport, do not cure these deficiencies in US 502. As noted above, the ability to form smoked sausages without either a browning agent or extended liquid smoke transport time of at least 5 days prior to shirring was altogether unexpected to those skilled in the art.

Applicants thus respectfully reiterate that US 502 is directed to conventional processes of applying a mixture of liquid smoke and browning agent to an at least three layered film and allowing the liquid smoke mixture to “act on (or stay in contact with)” the casing for at least 5 days. (Paras [0002] and [0013]). The coating of US 502 is formed from liquid smoke, browning agents and optional water. (Para [0026]). US 502 expressly notes the incorporation of browning agent on numerous occasions, and provides absolutely no indication that such browning could be omitted therefrom. (Paras [0002]; [0017 – 0020]; [0027 - 0029]). In fact, US 502 indicates a minimum of 20 % browning agent within its coating mixture. (Para. [0028]). US 502 further notes that the application of its “particular mixture of liquid smoke and browning agent” results in an increased depth of smoke flavor penetration. (Para. [0027]).

US 502 expressly teaches that its liquid smoke and browning agent mixture is allowed to “act on” the casing for 7 to 10 days prior to shirring. (Col. 3, lines 19 – 20; Col. 4, lines 12 – 13 and Col. 2, lines 58 - 60). US 502 indicates that the smoke-emulsion filled casing is stored in a bag during this time, to allow the smoke emulsion to at least partially penetrate the casing. (Col. 4, lines 12 – 14). US 502 is silent as to the surface energy of its films.

Applicants respectfully reiterate that US 502, considered as a whole, does not teach or suggest the recited liquid-smoke-impregnated food casing in which the casing is impregnated with liquid smoke, but not with an additional browning agent. Applicants respectfully reiterate that US 502, considered as a whole, requires a browning agent and thus teaches away from the claimed invention.

Applicants further respectfully submit that the outstanding Office Action's urging on Page 6, Ref. No. 17 and Page 12, Ref. No. 35 that one skilled in the art would have been motivated to have removed the browning agent to lower costs is merely a conclusory statement based entirely upon a hindsight analysis. One skilled in the art would find sausages exhibiting an intense coloration to be highly desirable, in contrast to the outstanding Office Action's urgings on Page 7, Ref. No. 17. In that regard, Applicants respectfully submit herewith a publication entitled "*Color of a Smoked Sausage*," attached as Exhibit I, noting that cold smoked products become dark brown and that large pieces of meat should be smoked until the "typical dark color" is obtained. Hence one skilled in the art would clearly consider the function of the browning agent "desirable," and the deletion of browning agent from US 502 would not yield a casing "suitable for its intended function," in contrast to the urgings of the outstanding Office Action on Page 12, Ref. No. 35. Thus there would have been absolutely no motivation to have omitted browning agent from the coating composition of US 502, and the only teachings to the contrary are those within the outstanding Office Action.

Furthermore, Applicants respectfully reiterate that one skilled in the art would most certainly not be motivated to decrease "costs" by omitting the browning agent of US 502, as one skilled in the art would instead expect that the resulting product would require even more smoke-emulsion soak time than its current 5 to 10 days for a smoke emulsion of lesser color depth to sufficiently penetrate the casing. Applicants respectfully submit that an increased soak time would not increase the cost of the coating solution per se, as correctly alluded to by the Office Action on Page 13, Ref. No. 38. Applicants respectfully submit that a myriad of factors influence the overall cost of the final casing, however, and that the cost of the casing coating solution represents only a fraction of the overall cost of the casing.

A significant component in the overall cost of a sausage casing is the time required to produce the casing. Applicants respectfully reiterate that an even longer smoke-emulsion soak time would have been expected to be required for heretofore known casings in conformance with US 502 in the absence of its browning agent. A longer smoke-emulsion soak time translates directly into an increase in overall production cost that would be expected to more than compensate for any decrease in “coating cost,” as evidenced by the incorporation of browning agents within heretofore known coating solutions. US 502 further evidences the importance of minimizing processing times in its statement that “[f]or the meat-processing industry, it is of particular interest” to process casings “with high efficiency”. [Para. 0009]. Applicants thus respectfully submit that no prima facie case exists for the recited omission of the browning agent.

Applicants further respectfully reiterate that there is no combination that can be gleaned from the secondary references that in any way teach the omission of a browning agent from smoke formulations, because none of the secondary references are directed to smoke transport casings and hence can provide no teaching. Applicants further respectfully reiterate that the Office Action is instead indulging in an impermissible hindsight analysis.

And US 502 most certainly does not teach or suggest the inventive liquid-smoke-impregnated food casings that do not contain an additional browning agent and which further do not have a liquid smoke application time of at least 5 days prior to shirring, as recited in the claims as-amended. As noted above, it was altogether unexpected that the recited food casings could be produced without the heretofore known extensive liquid smoke application time, particularly in the further absence of additional browning agent. US 502 clearly teaches up to a 10 day soak time, and such extended soak times are based upon coating compositions that further contain browning agent. Hence the moderate liquid smoke application time flowing from the claimed food casing was not predictable to a person of ordinary skill in the art, and the foregoing rejection should be withdrawn. MPEP § 2143 A(3).

US 502 also does not teach or suggest inventive food casings having a surface energy of greater than 35 dyn/cm to uniformly apply the liquid smoke and a swelling value of at least 10 %, much less that such food casings which are further either a single-layered film having a thickness of up to 130 μm or a multilayered film having a polyamide inner layer with a thickness of up to 70 μm would result in liquid-smoke-impregnated food casings that do not require either an additional browning agent or a time of action of the liquid smoke of at least 5 days prior to shirring, as further reflected in Claim 1. US 502 merely provides a generic list of materials, including polyamides known to have inferior absorption. US 502 is also altogether silent as to both casing thickness (as correctly noted by the Examiner) and surface energy values. As will be noted in greater detail below, the cited secondary reference merely generically note surface energy elevation to improve meat adhesion and single layered UV barrier films having a preferable thickness of 25 to 40 microns.

Applicants thus respectfully submit that US 502 simply cannot teach or suggest that food casings incorporating polyamide and/or copolyamide alone as either a sole or inner layer having a surface energy of at least 35 dyn/cm and either a single-layered thickness of 50 to 130 μm or a polyamide inner layer thickness of 15 to 27 μm in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 wt % would permit the impregnation of the casing with liquid smoke in the absence of an additional browning agent and further in the absence of a time of action of the liquid smoke of at least 5 days prior to shirring, as recited in Claim 13 as-amended.

US 502, merely teaching liquid smoke, browning agent and optional water, further does not teach or suggest advantageous inventive food casings formed using liquid smoke that further comprises an additive to set the viscosity, much less setting the viscosity to ensure uniform liquid smoke wetting, as recited in Claim 15. Applicants respectfully submit that one skilled in the art would consider the optional “water” present within the liquid smoke composition of US 502 to be a solvent rather than an “additive” in contrast to the apparent urgings within the outstanding Office Action on Page 10, Ref. No 30. The secondary references, which are not directed to smoke transport films, do not cure this deficiency in US 502.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 502, considered either alone or in combination with the remaining art of record.

As indicated above, the secondary references do not cure the deficiencies in US 502.

In contrast to the recited liquid-smoke-impregnated food casings, US 427 is directed to single-layered films with improved UV barrier. US 427 initially discloses that nylon is thought to provide “unsteady” stretching behavior. (Col. 2, lines 12 – 26). The impetus of US 427, considered in its entirety, is thus the formation of single-layered films from a mixture of polyamide, polyolefin and pigment. (Col. 3, lines 24 – 34). The polyolefin is present in amounts of up to 30%. (Col. 4, lines 59 – 61). US 427 touts that its films have a “relatively low” thickness in comparison to “conventional sausage casings made of polyamide,” preferably ranging from about 25 to 40 microns. (Col. 6, lines 2 – 5). US 427 includes a Comparative Example formed from a single-layered film having a thickness ranging from 39 to 41 μm . (Col. 7, Comp. Ex. 1). US 427 is silent as to the swelling values and surface energy of its films.

Applicants respectfully reiterate that US 427, directed to improved UV barrier properties, does not teach or suggest the recited liquid-smoke-impregnated food casing, much less such casings having either a single layer or inner layer formed from polyamide alone impregnated with liquid smoke but not with an additional browning agent, and most certainly not such liquid-smoke-impregnated food casings that do not require a 5 day soak time prior to shirring, as recited in the claims as-amended.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 427, considered either alone or in combination with the remaining art of record.

Similar to the polyolefin blend casings of US 427, US 410 is generally directed to casings incorporating a polyamide layer disposed between outermost layers of polyolefin. (Col. 2, lines 5 – 10; Col. 3, lines 55 – 65; Col. 4, lines 35 – 36; Col. 4, lines 45 – 46; Col. 16, lines 6 – 9; and Col. 21, lines 3 – 14). The center polyamide layer of US 410 purportedly produces films that do not neck down during back-seaming. (Col. 3, lines 20 – 26; Col. 18, lines 17 – 18; Col. 18, lines 44 – 46).

In its background section, US 410 generically notes that “[i]t is known that a polar surface is needed for adhesion of a film to a meat product,” and that “[a] polar film surface can be provided by using: (a) polar resin ... and/or (b) surface modification.” (Col. 2, lines 13 – 21).

US 410 further indicates that it discovered that anhydride-containing polyolefin containing less than 1% anhydride often does not provide adequate meat adhesion. (Col. 3, lines 37 – 40). In contrast to the urgings in the outstanding Office Action on Page 14, Ref. No. 40, US 410 specifically singles out polyamide in its remark that “polymers such as polyamide can ... provide too much meat-adhesion and tend to pull meat off during unpackaging of the meat.” (Col. 3, lines 42 – 44). Hence US 410 does expressly caution that polyamide in contact with food could lead to “too much meat-adhesion.” US 410 goes on to state “[t]hus, it would be desirable to provide a casing having a film providing adequate meat adhesion to prevent purge, while being able to strip the film from the meat without meat pull-off due to too much adhesion of the film to the cooked meat product.” (Col. 3, lines 48 – 52). US 410 concludes this discussion by noting that “it has been found that adequate meat adhesion can be obtained using an anhydride-containing polyolefin having an anhydride functionality of at least 1 percent.” (Col. 3, lines 51 – 55). US 410 then emphasizes its conclusion by further stating that “[t]he first outer layer serves as an inside casing layer and comprises a first polyolefin” that includes either an acid copolymer or polyolefin containing at least 1 wt % anhydride functionality. (Col. 3, line 62 – Col. 4, line 5).

US 410 generically notes that its polyolefin food contact layers may be corona treated, especially to increase adhesion of its films to “proteinaceous material.” (Col. 5, lines 55 – 56; Col. 27, line 64 – Col. 28, line 3 and Col. 28, lines 13 – 15). US 410 indicates on multiple occasions that its interior film layer or polymer can have a surface energy of less than about 34 dyne/cm. (Col. 6, lines 20 – 26; Col. 17, lines 15 – 20; Claim 27 and Abstract). In fact, US 410 teaches that the polymer used to form the interior of its films preferably has a surface energy of less than 32 dyne/cm. (Col. 6, lines 42 – 44 and Col. 17, line 18). US 410 generically indicates that casings having a meat-adhesion layer formed from polar polymer “can be” corona treated, but the films do not “require” corona treatment. (Col. 17, line 39 – 45).

US 410 thus does not teach or suggest the claims as-amended.

Regardless of its teaching of corona treated polyolefin, US 410 does not teach or suggest the inventive liquid-smoke-impregnated food casings formed from polyamide alone or having an inner layer formed from polyamide alone, much less such casings impregnated on the inside with liquid smoke but not with an additional browning agent, and most certainly not such liquid-smoke-impregnated food casings that are not subjected to a 5 day soak time prior to shirring, as recited in the claims as-amended. Applicants further respectfully submit that regardless of any generic disclosure, US 410 teaches with specificity that polyamide can provide too much meat adhesion. Hence US 410 suggests to one skilled in the art that polyamide should not be subjected to corona treatment, as such corona treatment would increase the meat adhesion of a polymer that US 410 has already specifically cautioned as having too great a meat adhesion. Applicants respectfully submit that to conclude otherwise based upon the teachings of US 410 is to indulge in an impermissible hindsight analysis.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 410, considered either alone or in combination with the remaining art of record.

The claimed invention is likewise patentable in further light of US 295.

Applicants respectfully reiterate that US 295 is directed to sausage casings that avoid tightening lubricating agents and moisture retaining agents. (Col. 2, lines 62 – Col. 3, line 2). In contrast to the inventive smoke-containing casings, US 295 expressly states that its casings contain “no additional additives,” other than water. (Col. 5, lines 28 – 31). US 295 indicates absorption of up to 8 % water for polyhexamethylene adipamide. (Col. 5, lines 15 – 18). US 295 further indicates that storage time may be used “to ensure the even distribution of the water” within the casing walls. (Col. 6, lines 1 – 5).

US 295, generically directed to casings avoiding lubricating and moisture retaining agents that further contain no additional additives, does not teach or suggest inventive liquid-smoke-impregnated food casings, much less that casings incorporating polyamide or co-polyamide which further exhibit a surface energy of at least 35 dyn/cm may be impregnated on the inside with liquid smoke in the absence of an additional browning agent, and most certainly not such liquid-smoke-impregnated food casings that are not subjected to a 5 day soak time prior to shirring as recited in the claims as-amended.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 295, considered either alone or in combination with the remaining art of record.

Applicants respectfully reiterate that there would have been no motivation to have combined US 502, US 427, US 410 and US 295. US 502 is directed to food casings containing a mixture of liquid smoke and browning agent that require a 5 to 10 day smoke application time prior to shirring. US 427 is directed to single-layered UV resistant food casings that include polyolefin and further have a thickness of about 25 to 40 microns. US 410 is directed to films that do not neck down during back-seaming having a polyolefin food-contact-layer. US 295 is directed to sausage casings avoiding tightening lubricating agents and moisture retaining agents containing “no additional additives.” These are also altogether different problems solved.

Applicants further respectfully reiterate that food casings suitable for one application will not automatically work in another application, as each application has its own unique requirements. Applicants additionally respectfully submit that the requirements for smoke transport casings differ substantially from non-transport casings and do constitute “different food casing applications,” in contrast to the urgings of the outstanding Office Action on Page 15, Ref. No. 43.

However, even if one had combined US 502, US 427, US 410 and US 295 (which they did not), the claimed invention would not result.

Applicants respectfully submit that the combination of US 502, US 427, US 410 and US 295 would, at best, have resulted in a casing having a polyolefin-containing inner layer that was soaked in a smoke solution containing browning agent for up to 10 days.

The combination thus fails to teach or suggest that food casings incorporating polyamide or co-polyamide alone as a sole or inside layer having a surface energy of greater than 35 dyn/cm and either single-layered thickness of 20 to 130 μm or a polyamide inner layer thickness of 15 to 70 μm in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 % would permit the impregnation of the casing with liquid smoke that does not require either an additional browning agent or a time of action of the liquid smoke of at least 5 days prior to shirring, as recited in Claim 1 as-amended. US 502 clearly requires both a browning agent and a 5 to 10 day smoke application time. US 427 is directed to single-layered films formed from a polyolefin-containing mixture having a relatively low thickness. US 410 is likewise directed to casings having a polyolefin layer adjacent the casing stuffing. US 295 teaches absorption of 8 % water containing no additional additives.

The combination thus can not teach or suggest that food casings incorporating polyamide and/or copolyamide alone as either a sole or inner layer having a surface energy of greater than 35 dyn/cm and either a single-layered thickness of 50 to 130 μm or a polyamide inner layer thickness of 15 to 27 μm in which the casing or the polyamide inner layer of the casing has a swelling value of at least 10 wt % would permit the impregnation of the casing with liquid smoke in the absence of both an additional browning agent and a time of action of the liquid smoke of at least 5 days prior to shirring, as recited in Claim 13 as-amended. As noted above, US 502 requires a browning agent and liquid smoke application time of up to 10 days. US 427 is solely directed to mono-layered polyolefin-containing casings having a thickness lower than 50 microns. US 410 is likewise directed to casings having a polyolefin layer adjacent the casing stuffing. US 295 teaches absorption of water alone.

Nor does the combination teach or suggest advantageous inventive food casings formed using liquid smoke that further comprises an additive to set the viscosity and thereby wet the liquid smoke on the inside of the casing uniformly, as recited in Claim 15. US 502 is altogether silent as to viscosity additives. The secondary references are not directed to smoke transport films and thus are likewise silent as to liquid smoke viscosity additives. The only reference to coating uniformity within the secondary references is US 295's teaching of storage time to ensure even distribution of its water. Thus none of the cited references teaches or suggest viscosity additives as a result effective variable in ensuring uniform liquid smoke wetting.

Accordingly, Applicants respectfully reiterate that the claimed invention is patentable in light of US 502, US 427, US 410 and US 295 considered either alone or in any combination.

CONCLUSION

It is respectfully submitted that Applicants have made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all of pending Claims 1, 3 through 8 and 12 through 15 are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned if any questions remain to expedite examination of this application.

It is not believed that extensions of time or fees are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time and/or fees are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required is hereby authorized to be charged to Deposit Account No. 50-2193.

Respectfully submitted,

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Claire Wygand

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Color of a Smoked Sausage

Cold smoked products develop a yellow-gold color. As the smoking progresses the color will become light brown and then dark brown. Keep in mind that cold smoking continues for days, even weeks at a time with occasional breaks in between.

Hot smoked products are smoked in a matter of hours. The color depends mainly on the length of smoking. The color will start changing from light brown to dark brown. The type of wood will influence it as well, oak smokes in brown color, hickory smokes reddish-brown. Heavy smoke will increase the amount of smoke deposition.

Keep in mind that sausages owe their characteristic flavors to the different spices they contain. Long smoking with heavy smoke can overpower these subtle spice aromas. A sausage will become nothing else but a piece of meat with a heavy smoky flavor. Smoking a thin 1/2" piece of meat like jerky for 3 hours applying heavy smoke might make it bitter and non-palatable. When smoking, the rule "easy goes a long way" holds very much true. Large pieces of meat such as hams, bacon, and loins will require longer smoking times and should be smoked until the typical dark color is obtained.

Using softwood from evergreen trees will make casings much darker, even black due to the deposits of tar and resin that this wood contains. Wet casings or excessive levels of humidity in the smokehouse will create darker casings and impede the smoking process.